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TICOM/M-8

Diary kept by Capt. T. Carter, I.C., of Tests on Baudot Equipment conducted in the U.K. June 29 to July 8, 1945

TICOM
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BAUDOT TESTS

The purpose of these tests was the setting up of the GERMAN Baudot machinery, captured at Rosenheim, by six German PW's who had been brought to England for this purpose. The machinery was new in detail, though not in principle, to the allies and satisfactory examination was only possible if it was set up by PW's working under allied control. As is known, the machinery was used by the Germans for intercepting and printing Russian 2-channel, 6-channel and 9-channel circuits.

This diary of events commences on Friday, 29 June 1945, when the writer arrived at the site as O/C station. Quarters and rations had previously been arranged, the site examined for suitability and guard detail provided.

The machinery itself, which had been stored with Ticom, had been brought in its crates to the site during the two previous days, and was ready for the PW's to start work.

June 29th

PW's arrived under escort of Capt. Ginsberg of CSDIC. It had been agreed from the outset that PW's should receive exceptional treatment. They had themselves brought the apparatus, much of which had been buried, and its use to the notice of the allies and they had shown complete willingness to cooperate in the exposition of the material both mechanically and in the results to be derived from its use.

The work started in the afternoon. In Rosenheim, the type baskets had been removed from the teleprinters and buried; this was because they contained type heads bearing Russian characters, which immediately disclosed their purpose. The type baskets had all been didinterred by the Germans, but the packing of the equipment for transport to England had been so hurried, that there had been no time to fit the correct type basket to each teleprinter.

By the end of this afternoon these had all been sorted out, and each type basket had been allocated to its proper machine. There were some fifty teleprinters involved.

A rapid survey of available tools revealed some lacunae; these were to be filled by loans from F.O.R.D.E. to be brought down the next day.

The evening was spent in completely informal conversation in a party consisting of the six PW's and the writer. The object in view was the putting at ease of PW's and the determination of their morale. The result was completely satisfactory in that PW's were seen to be in excellent spirits, and were quite obviously delighted with their conditions and pleased to be concerned again with the machinery they had been operating for so long.

June 30th

By the end of this day the 9-channel universal set had been erected but was not yet printing. An intercept receiver (Fu. H.E.C.) had been set up and coupled to two aerials through a wide band amplifier. Both the aerials (with screened cable) and the wide band amplifier were part of the equipment. One aerial was erected at the top of a tall tree, close to the operating hut, about 30 metres in height. The other used the mast tubing brought by the Germans and was about 18 metres high.

Although the machine was not printing, several signals were

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picked up by one of the German operators. These were astonishingly loud and clear - most being QSA 5, R9*.

The extra tools arrived from F.O.R.D.E. and were most welcome - especially an Avometer, since the only other meter available, other than those in the sets, was the private property of one of the German mechanics.

Work continued till 9 p.m. Except for one day, when a special evening watch was maintained till 12 midnight, work continued from breakfast time till about 9-10 p.m. from this day on.

July 1

today

The first effective operations started. The 9-channel set was printing reliably by midday on a 2-channel circuit (about 8000 kc/s) and on the 9-channel BAKU station by the evening (12600 kc/s approx). //

During the month or so that the apparatus had been standing, boxed, in open trucks in Germany, some damage was done by rain seeping through. This caused several minor difficulties which delayed the setting up of the apparatus and caused rust on some iron parts and spoilt others.

A 5000 mfd electrolytic condenser was functioning erratically and no German spare was available. Requests for replacement from British sources were met with incredulity that such a condenser existed! Ultimately an enormous battery of condensers was sent down to make up the required capacity. As only the smoothing circuit for the deflection system of the Cathode Ray tube monitor was affected, printing was not jeopardised and this clumsy arrangement was not used.

Preparations were made this day by the German evaluator for dealing with the traffic to be taken; charts were prepared and index headings drawn out.

The whole question of T.A. on the traffic subsequently came up for discussion; orders had been that the T.A. (analysis of traffic) should not be neglected, and it was determined to strike a balance between the requirements of T.A. (copious traffic) and examination of machinery (little or no traffic). Furthermore, it was decided that example was better than theory, and if the German evaluator could be left to do his work as he had previously done it, small points would become clear at once - and even stimulate further questions - which might be overlooked in a theoretical treatise on the subject, even though the German wrote it himself.

On subsequent days therefore, the operators worked under the general direction of the evaluator; they picked out the circuits which would give him the T.A. data he required, held them for as long as he wanted and then left them.

A little 9-channel traffic from BAKU was taken every day. No cipher passed on this circuit during our observation, but it was shown how data such as location of factories, names of factory managers, imports and shortages could be compiled from the clear messages. Operators chat, which was always in clear on all channels, itself provided good material. //

July 2nd

Operations nicely into swing. T.A. section is rapidly accumulating data; the 2-channel and 9-channel circuits are printing solidly. Printing on the 6-channel ROSTOV-MOSCOW link is only spoilt because of jamming by an American commercial transmitter.

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As conditions are so very much better during the evening, an evening shift has been arranged for July 4th.

An analysis was made today by Mr. Kenworthy of the heart of the machinery, the distributor system. This is now clear; the remainder of the problem is now largely detail, though important detail.

It is also decided to set up a second 2-channel set. Some anxiety is felt about the power supply—we are now running at well over our 15 Amps limit.

We have found a document giving details of the two channel set, and a translation must be embarked on soon.

July 3rd

The 6-channel set continues to give trouble, and some despondency is felt about its efficacy. But PW's insist that it is their best set. It was built in 1939, went with them to Russia and back and never let them down.

Conclude that unsatisfactory results are due to the jamming American transmitter

Today the first serious conflict between engineering and T.A. arose. Mr. Kenworthy, for the engineers, maintained that time could be lost by concentrating on getting ^{traffic} the German evaluator could instruct Mr. Uzielli in the technique and the remainder could be done by the T.A. organisation elsewhere. It was added that serious T.A. was impossible at the site in that many of the transmissions could not be satisfactorily printed owing to lack of directional aerials and facilities for diversity reception and that cover here was hopelessly restricted in that few sets were working and those hot for 24 hours. It was claimed that it was better to spend all the time in examining and testing machinery so that it could be removed quickly and be put to full operational use. Such sets as were operating, could, it was suggested, be used for the instruction of "Y" station supervisors.

On the other hand it was strongly felt by the writer that here was a golden and unrepeatable opportunity of seeing the German system of T.A. working-in miniature admittedly, but nevertheless as a whole. Instruction can never really take the place of example, and concrete, practical evidence would be available if the Germans were allowed to proceed in their own way for a few days. The extra time involved would not be more than about a week and their note-books, diagrams and workings might throw up valuable points.

The decision reached is, as usual, a compromise; the T.A. section is not stopped, but increased importance is given to purely technical considerations.

July 4th

As arranged, a morning and an evening shift was worked this day. In spite of this the traffic total is not very good. Some ten to twelve 2-channel links were located but most of them were sending only synchronization signals. The 9-channel BAKU circuit was working strongly and produced, among other things, a message of congratulation to Marshal Stalin from an admiring South Russian community.

The second 2-channel set is now virtually completed. Difficulties from exposure to damp have caused delays—apart from the fact that the mechanics are constantly tidying up the 9-, 6- and 2-channel sets already up and printing.

The instructions on the 2-channel set were translated today, and

further discussions on method took place. One party is for the erection of two more 2-channel sets in the operating room, the other for their erection in another hut where they can be put up without the help of the Germans-this in order to gain experience.

A complaint was received from the Post Office. It is said that we are interfering with local reception of the B.B.C.'s programmes. The enquiring official was asked to pursue the trouble from his end and to let us know if it abated.

July 5th

Mr. Kenworthy returns here with Mr. Mason and two assistants.

Confidence is expressed both by Mr. Kenworthy and Mr. Mason that the erection of the equipment will be a relatively simple matter now and both are anxious to get it away and taking traffic.

Rather surprisingly Mr. Uzielli is of the same opinion; there is still a T.A. /Cryptographic difficulty in the Russian machine cipher, but he is of the opinion that little will be lost if a move away from the site is made soon. It is decided to ask for advice from Major Grant on this point tomorrow.

In the meantime, a 2-channel set is being erected in a separate hut. There are initial difficulties-mainly traceable to relay trouble due to wet and knocks in transit. No German help is being called in, as it is felt that if we can erect this set on our own, our problems with the machinery are virtually over.

The Post Office authorities ring up again today. They claim that the trouble is mains-borne and ask if we have any unusual electrical machinery. A non-committal reply is given and Colonel Wallace is asked, to stop any more questions being asked. (The trouble is actually due to insufficient suppression). Through all this the sets are operating, producing traffic and T.A. is being continued.

July 6th

One two-channel set is at last made to work by our own unaided efforts in a separate hut, and the last two were brought in this afternoon. Only the test slip 'TG' could be run as no screened cable for aerial leads was available, and the noise of the machinery kills the receiver on an open aerial. We now have some idea of the troubles of the local population with their broadcast reception.

Meantime, this morning, Mr. Kenworthy completes his analysis of the distributor discs for the 9-channel universal. We learn later incidentally, that a new super version of the 9-channel set was planned for the German Navy for the interception of Brazilian traffic. The set planned was to be on a great scale and would have made the models we have look like laboratory experiments. The end of the war cut all these preparations short, and what had existed was destroyed.

In the afternoon a visit was paid by Mr. Kenworthy, Mr. Mason and the writer to station X in order to discuss the state of the tests with those interested. We were instructed that operations must cease in 24 hours, as the G.P.O. could not be silenced much longer and that security was endangered. We were asked if the machinery could be removed and reerected without German help, and were able to say on behalf of both British and American examining officers that this was so.

It was also learnt that our T.A. efforts had gone much further than originally intended.

We have been asked to write recommendations for the long term and short term disposal of the equipment and of the PW's.

In the meantime, the remaining sets are to be tested out quickly and work stopped by six o'clock tomorrow night.

The GERMAN evaluator is to be specially interrogated on the Russian secret T/P tomorrow and Major Grant is satisfied that enough is known of the T.A. aspect generally to permit full value to be drawn from full time interception.

No further traffic is taken. PW'S are told that the local interference caused by the machinery forces us to close down and instructions are given for testing the parts of the other two 9-channel sets in the frame of the original. This will enable the tests to be completed very quickly, and ensure that all three sets are really in working order when they leave the site.

The 6-channel set is at last made to work perfectly (except that one of the channels is silent owing to a lost relay armature) and dispositions are taken for its dismantling.

July 7th

Testing of the last elements of the 9-channel sets is proceeding, side by side with the packing up of the remaining apparatus. The interrogation of the German evaluator is completed and satisfaction expressed with the result.

Mr. Kenworthy is supervising the packing operations; each case is being numbered and its contents listed.

In the course of conversation it is learned that one of the men, Erdmann, is married and has five children in the Russian occupied zone. Erdmann himself was not asked this but our informant declared that Erdmann realised he would not be able to go back to them, whatever happened. This is unfortunate news as it had been understood by the writer that all PW's were single.

July 8th

By midday all packing was completed and orders to move are awaited.